

16- 413

ACCEPTED/FILED

JAN - 3 2017



KONGSBERG

FCC
1270 Fairfield Rd
Gettysburg, PA 17325-7245

Federal Communications Commission
Office of the Secretary

Trondheim 09. November 2016

Request for waiver for Kongsberg Maritime Broadband Radio (MBR)

Background

DOCKET FILE COPY ORIGINAL

Kongsberg Seatex AS – a Kongsberg Maritime subsidiary, is the manufacturer of the Maritime Broadband Radio (MBR), which is a radio system for high-speed data transmission in maritime operations. The MBR provides up to 15 Mbps IP connectivity between multiple stations at ranges in excess of 50 km. The MBR handles difficulties related to sea fading and provides reliable and resilient data links in maritime operations. The radio system consist of receivers and transmitters operating with TDMA transmission on frequencies in the 4900 to 5900 MHz band. The system operates on a single RF channel with 20 MHz bandwidth (+/- 10 MHz). Two channels are preferred for the possibility to operate two separate networks in the same area. The radio is a phased-array smart antenna with software controlled real-time beamforming. Using up to 60 antenna elements in one enclosed antenna, gives a smart antenna gain of up to 24 dB, and a beam width of 9 degrees (-3dB). The maximum output power is 4 W and the maximum EIRP is 60 dBm.

The output power is software controlled and the actual power used is set to the minimum power necessary to obtain error free transmission. See details on MBR Adaptive Power Control.

For more information about the product types, please refer to the MBR data sheet and MBR technical description.

Typical operations for the MBR are remote controlling of unmanned vessels, hydrographic survey, offshore oil and gas and coast guard operations.

The MBR system has been operated in the Gulf of Mexico on an experimental license since 2011. No problems with interference to other systems have been reported. The MBR system has also been in operation in Norway since 2011, and no incidents of interference have been reported. We have also operated in Canada, UK, Netherlands, Belgium, France, Panama, Australia, China, Indonesia, Switzerland, Colombia, Brazil and Sweden with no incidents of interference.

The MBR products are CE-marked by a FCC accredited lab.

KONGSBERG SEATEX AS

Pirsenteret N-7462 Trondheim Norway Telephone +47 73 54 55 00 Telefax +47 73 51 50 20 km.seatex@kongsberg.com
Enterprise no 982 786 185 MVA Bank Account 7058.06.84341 www.kongsberg.com



KONGSBERG

It is the intention of Kongsberg to market and sell the MBR system in the US. As we have not been able to find a TCB to conduct the equipment authorization for "new technology products", we have been forwarded to the FCC WTB. So far we have been advised by FCC, represented by Tim Maguire, to apply for a waiver of 47 CFR Part 80 rule 80.375(d) used for radiodetermination 5460 – 5660 MHz band or 47 CFR Part 90, Subpart M of the rules for Regulations Governing the Licensing and Use of Frequencies in the 5850 – 5925 MHz band for DSRCS (Latter band was suggested upon request from Kongsberg). The MBR can operate on channels in both of these bands. In Norway for instance, we are operating nationally on the following frequencies: 5180, 5230, 5862 and 5890 MHz.

The options for MBR are a waiver in the 5460 – 5660 MHz band or a waiver in the 5850 – 5925 MHz band.

The following application is a response to this proposal.

Request for waiver for Kongsberg Maritime Broadband Radio (MBR)

Kongsberg Seatex AS hereby respectfully applies for a waiver for operating the Maritime Broadband Radio (MBR) regarding frequency use and power levels in US waters.

Kongsberg Seatex AS hereby applies for a license to use two 20 MHz channels (+/- 10 MHz) and EIRP up to 60 dBm for high-speed digital maritime communications.

Frequencies allocated for Short Range Communication Service, mainly land based Intelligent Transportation Systems, or other land based systems, the interference potential between these services and maritime use is considered low due to the separation distance that will occur between the systems. The MBR system will normally be used at a large distance from shore and a power-regulating algorithm in the system will secure that the lowest power possible for good communication is used.

At sea the interference are reduced by using a highly directive phased array radio with power level adjustments in real-time towards receiver so that radiation in other directions are kept to a minimum.

With regards to the criteria in 47 CFR sections 1.925(b)(2) and (3) we have the following comments:

(2) There exists no standards or type approval facilities for this type of equipment which is a new technology broadband radio solution for use in a maritime environment. We have been in contact with several type approval companies (TCB's) regarding possible type approval for the MBR equipment but as there is no national or international standard for this kind of equipment, we are not able to have it type approved in a normal way.

KONGSBERG SEATEX AS.

Pirsenteret N-7462 Trondheim Norway Telephone +47 73 54 55 00 Telefax +47 73 51 50 20 km.seatex@kongsberg.com
Enterprise no 982 786 185 MVA Bank Account 7058.06.84341 www.kongsberg.com



KONGSBERG

In Europe an ETSI standard and test specification for MBR is under development; however this is not yet finished.

(3i) In our opinion, the grant of the waiver will be in the public interest as the MBR system will contribute to higher safety and more efficient communications in existing maritime operations. Moreover, the MBR system performance is unprecedented and opens up for several new applications, especially in autonomous and remote controlled maritime operations.

(3ii) In our opinion, this case represents unique and unusual circumstances due to the lack of normal test and approval facilities for the MBR system. This makes it necessary to apply for a waiver for frequencies and power levels as Kongsberg Seatex AS, the applicant, has no reasonable alternative to introduce the MBR system to the market.

Trondheim 09. November 2016

David Møller Hagen, M.Sc.

Project Manager MBR

Kongsberg Seatex AS

Trondheim, Norway

KONGSBERG SEATEX AS

Pirsenteret N-7462 Trondheim Norway Telephone +47 73 54 55 00 Telefax +47 73 51 50 20 km.seatex@kongsberg.com
Enterprise no 982 786 185 MVA Bank Account 7058.06.84341 www.kongsberg.com